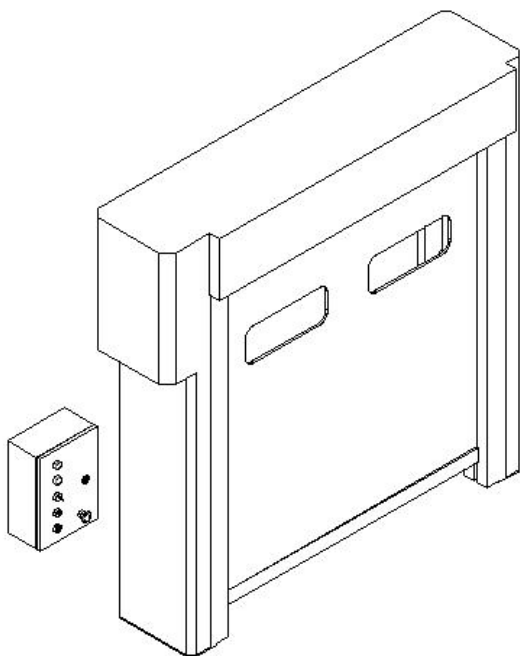


High-Speed Doors Motor and Control System User Manual (V.3572)



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1. Safety precautions

★ Open the box to check whether the product is in perfect condition before installation. Please contact the dealer if there is any product defect.

★ Please read this instruction book carefully before installation, to avoid damages caused by improper installation.

★ Please ensure that the door is fixed firmly and has good balance, that there is no clamping stagnation, and that all components have no foreign matters before installation. Moreover, the axial length and mounting hole should be reserved according to this manual.

★ Wiring and debugging of control box should be conducted by professionals. Otherwise, personal injury and property loss might be caused.

★ Please re-examine whether the power line meets requirements for this machine, and whether the interfaces and wires are fixed,

contact-free and interference-free before the power supply is connected.

★ Please confirm that there is no obstacle within the operation scope of the door. Pedestrians and vehicles are forbidden.

★ Maintenance of this product should be conducted by professionals. Please cut off the power supply before maintenance work.

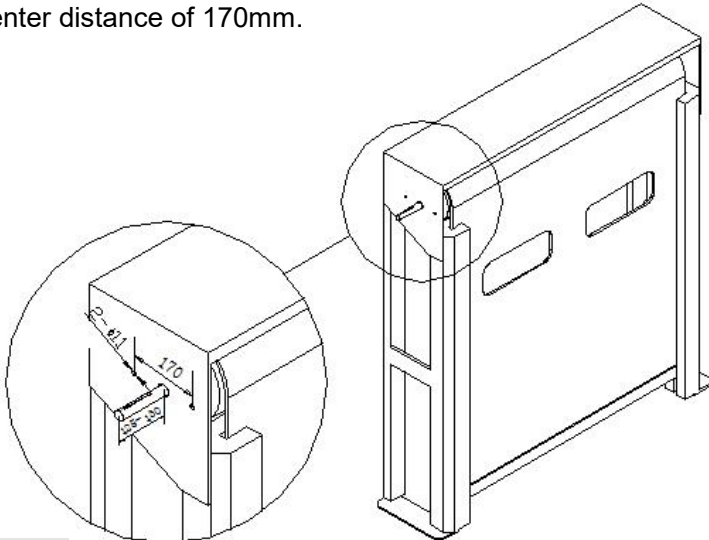
2. Technical parameters

Model	HSD750	HSD750S	HSD1500	HSD1500S
Motor protection class	IP54	IP54	IP54	IP54
Work duty	S3,25%	S3,25%	S3,25%	S3,25%
Controller protection class	IP65	IP65	IP65	IP65
Power supply	220V,50Hz	380V,50Hz	220V,50Hz	380V,50Hz
Motor power	750W	750W	1500W	1500W
Rated speed	2800rpm	2800rpm	2800rpm	2800rpm
Rated current	4.2A	2.6A	6A	3.7A
Standard reduction ratio	20:1	20:1	20:1	20:1
Max. door moving speed	2m/s	2m/s	2m/s	2m/s
Max. door surface	12m ²	16m ²	20m ²	30m ²
Frequency converter type	220V, 1.5KW	380V, 1.5KW	220V, 2.2KW	380V, 2.2KW

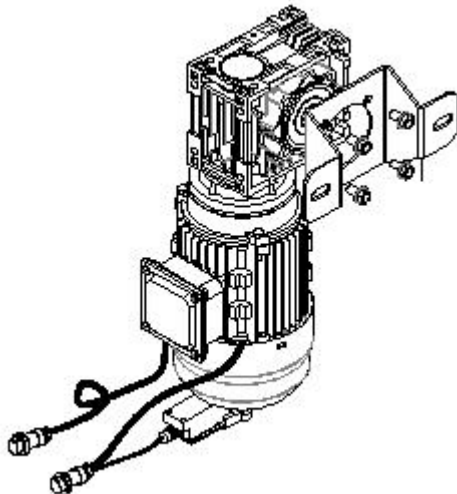
Control voltage	DC24V	DC24V	DC24V	DC24V
Adjustable frequency	0-100Hz	0-100Hz	0-100Hz	0-100Hz
Absolute encoder	64 cycles	64 cycles	64 cycles	64 cycles
Release method	Hand crank	Hand crank	Hand crank	Hand crank
Environmental temperature	-20°C—+50°C	-20°C—+50°C	-20°C—+50°C	-20°C—+50°C
Motor size	220X140X420 mm		240X160X470 mm	
Motor weight	11.5Kg		15Kg	
Control box size	390X280X180 mm		390X280X180 mm	
Control box weight	9.25Kg		9.25kg	

3. Installation

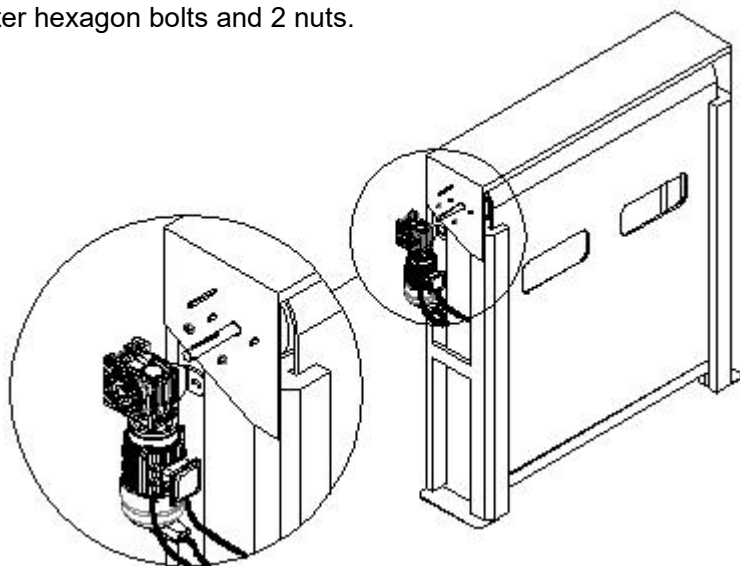
Step 1: Guarantee that the distance between $\Phi 25\text{mm}$ axle and mounting plate is within the scope of 125-130mm, mill a key groove of 8X80mm, punch a hole of 2- $\Phi 11\text{mm}$ in advance, and ensure a center distance of 170mm.



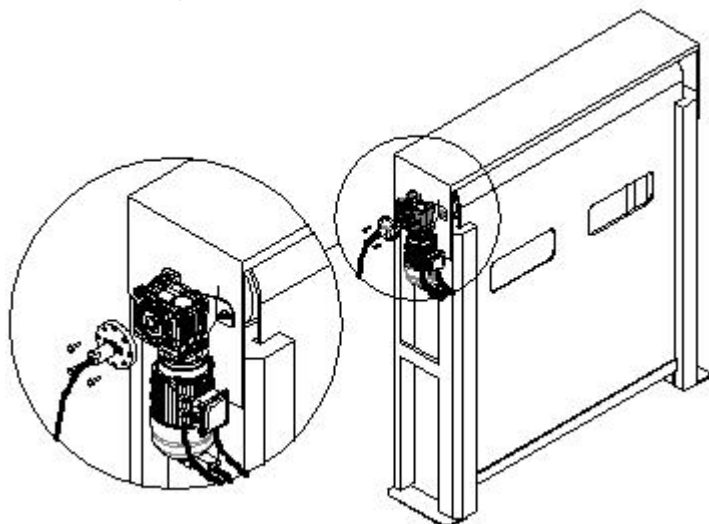
Step 2: fasten the mounting bracket and main engine with 4 PCS M8X16 outer-hexagonal three-combination screws.



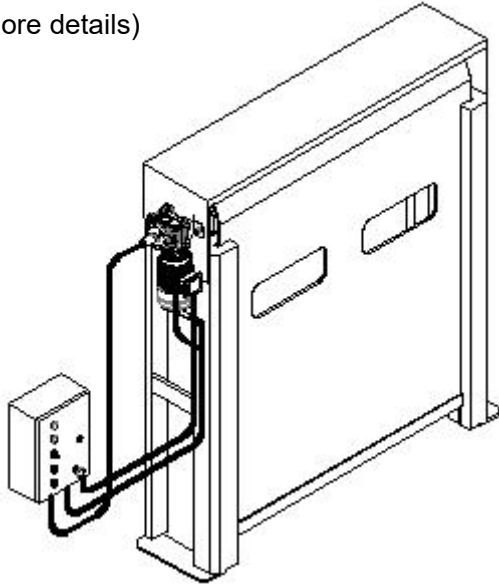
Step 3: Install a flat key of 8X80mm, push the main engine into the mounting plate, and fasten the main engine with 2 PCS 10X25mm outer hexagon bolts and 2 nuts.



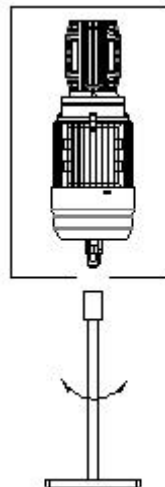
Step 4: Install the encoder by aiming at the reducer pore and key groove; connect and fasten the mounting plate with reducer by 4 M8X25 outer hexagon bolts.



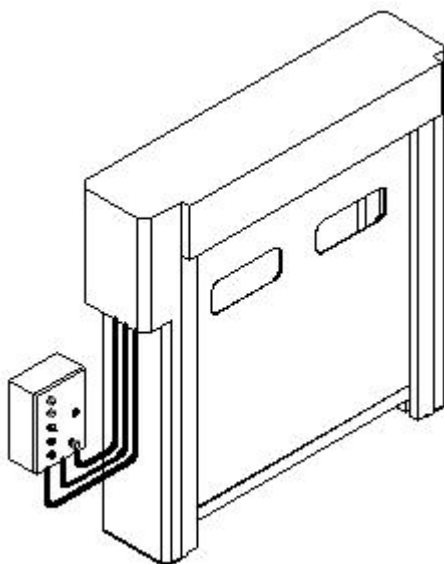
Step 5: Install the control box; complete wiring and debugging (see 4 and 5 for more details)



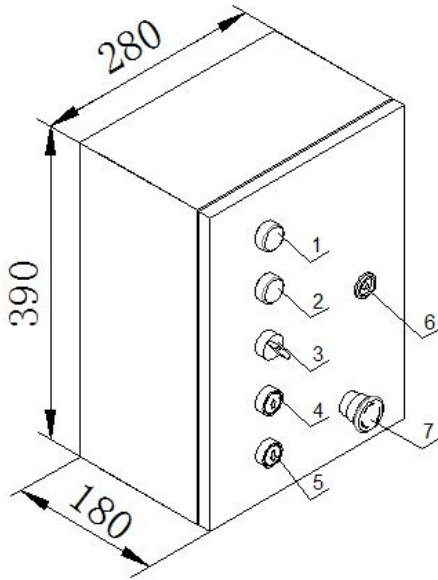
Step 6: Debug the release function: Make the door cover directly face the lower end of motor shaft, reserve a release hole with the diameter greater than 20mm, use T spanner in the accessories to push aside the safety switch (the on-off key is ineffective; keep the static state), insert the motor shaft, and rotate T spanner with hands; the door should move up and down.



Step 7: Install the door cover after normal debugging.

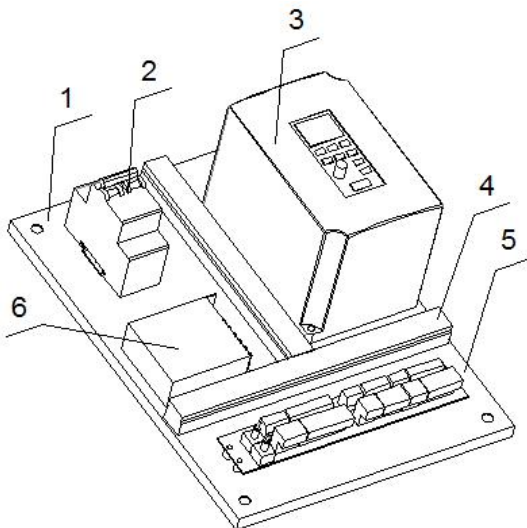


Outline Dimension of the control box



- 1.The Power Light (Red)
- 2.Working Light(Green)
3. Selector Switch
4. Up Button
- 5.Down Button
6. Lock
7. Emergency Button

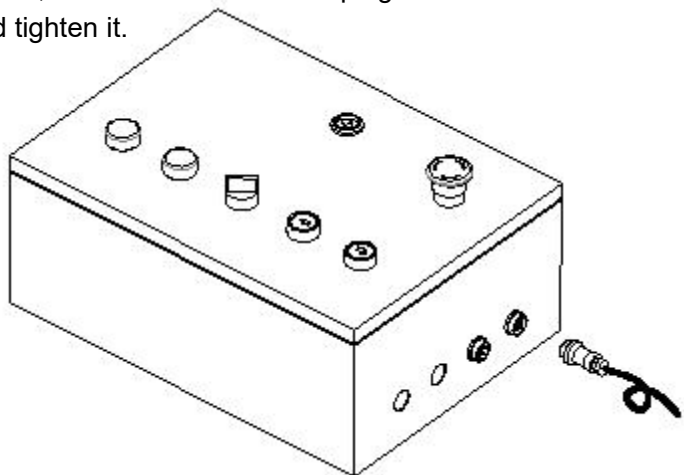
Internal Component Diagram



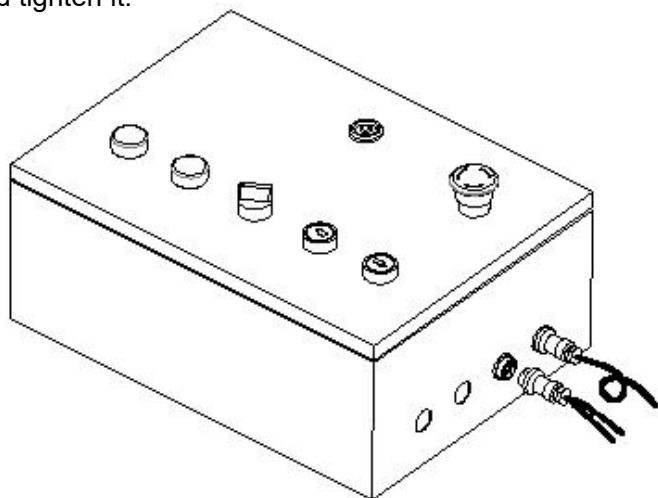
- 1.Mounting Plate
- 2.Air Switch
- 3.Transducer
- 4.Trunking
5. Terminal Block
6. DC24V power supply

4. Wiring

Step 1: Connect the motor line: please confirm the motor power parameters, control box power parameters and the actual power supply match, insert the motor cable plug into the control box four socket and tighten it.

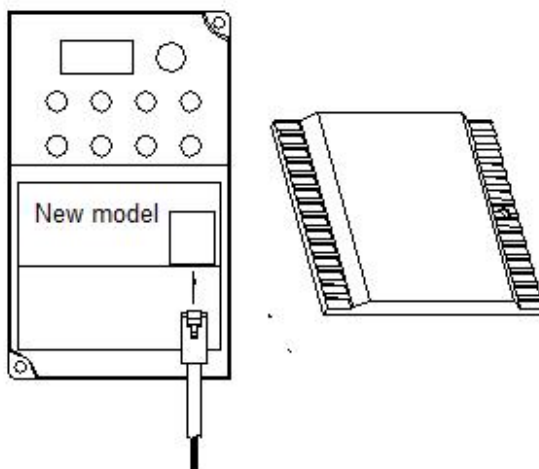


Step 2: Connect the brake line and the safety switch line: insert the brake wire and the safety switch into the control box five core socket and tighten it.

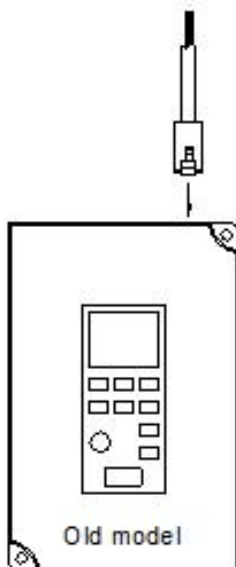


Step 3: Connect the encoder wire: Insert the crystal plug of encoder into the interface of frequency converter.

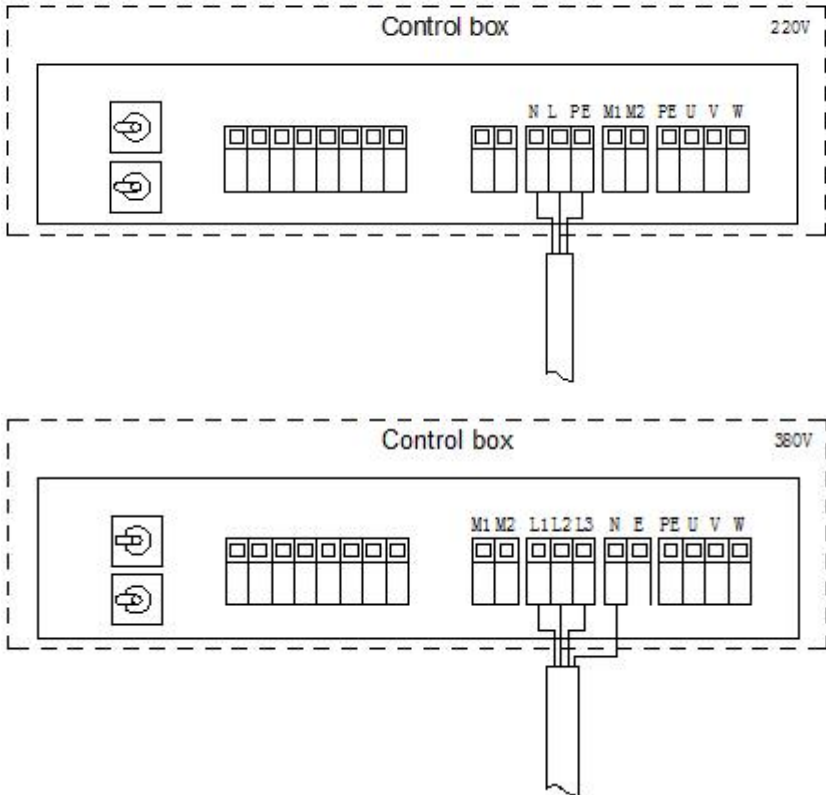
※The converter of the new model is inserted in the figure below



※The converter of the old model is inserted in the figure below

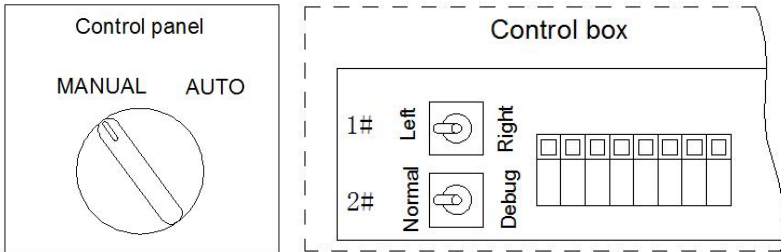


Step 4: Connect the power line: Choose the power source of single-phase 220V or three-phase 380V according to the voltage specified for the product; the wiring position should be corresponding to the terminal position in the figure.



Check whether the wiring is correct and firm after completing the above five wiring steps. Enter debugging stage.

5. Debugging



Note: There are two toggle switches in the terminal blocks of control box: 1# toggle switch (left installation / right installation) and 2# toggle switch (normal / debug).

Step 1: Inch up or inch down to confirm the state of door opening and closing as well as encoder state.

1. Reconfirm whether various connection wires are correct and firm. Measure whether the supply voltage matches the voltage specified for the product.

2. Move the change-over switch of control box face panel to “MANUAL”, and move 2# toggle switch to the position of “Debug”. At this time, red light on the cover is normally on and green light flickers with the cycle of 1S. By pressing “↑” button, the door should be able to inch up; by pressing “↓” button, the door should be able to inch down. If the movement direction is opposite, **solution 1:**press the red “emergency stop” button,then hold press both “↑” and “↓” button at the same time,then green light off, loosen the red “emergency stop” button, “↑” and “↓” button,

after the green light is normally on , the direction has been reversed.

Solution 2:press exchange any two wires at “U, V and W” terminals in the terminal blocks after cutting off the power supply.

3. If alarm or false operation phenomenon is found 1s later (green light flickers with the cycle of 6S), there will be two possibilities. Press the emergency button and loosen it to relieve the alarm state. Conduct adjustment according to the following methods.

(1) Encoder reverse signal. Adjustment method: Move 1# toggle switch to the opposite position. Move it to the right installation position if it is in the left installation position, and move it to the left installation position if it is in the right installation position.

(2) The crystal plug of encoder is not thoroughly connected to the 485 interface of frequency converter. Adjustment method: Tighten the crystal plug.

Step 2: Setting of upper and lower limit positions.

1. Set the lower limit position. Inch down the door to the place about 1-2 cm away from the ground, press the red “emergency stop” button, and hold press “ ↓ ” button. The green light is off 3s later. Loosen “ ↓ ” button. The lower limit position is set successfully after green light flickers with the cycle of 1s again. Then loosen the red “emergency stop” button.

2. Set the upper limit position. Press “ ↑ ” button to open the door to the required upper limit position. Press the red “emergency stop” button and hold press “ ↑ ” button. The green light is off 3s

later. Loosen “ ↑ ” button. The upper limit position is set successfully after green light flickers with the cycle of 1s again. Then loosen the red “emergency stop” button.

3. After the limit position is set successfully, please move 2# toggle switch to “Normal” position. Press “ ↓ ” button, and the door should be able to drop to the lower limit position. Press “ ↑ ” button, and the door should be able to rise to the upper limit position. If the door cannot move or stops immediately after moving for 1s, please check whether the limit positions are set correctly, whether the distance between upper and lower limit positions is too short (the required distance $\geq 1\text{m}$), and whether the brake wire and encoder wire are accurately connected.

Note: Please complete setting of upper limit position within 10min after the lower limit position is set successfully. Otherwise, the lower limit position should be set again before the upper limit position is set.

If other function settings are default and there is no external device after the above two debugging steps are completed, the machine can be used normally. At this time, if the change-over switch is moved to “MANUAL”, the door won’t close automatically; if the change-over switch is moved to “AUTO”, the door will close automatically 3s later.

If there is a need to set other functions and external devices are connected, please enter step 6 and 7.

6. Other function settings

1. **Setting of automatic door closing time.** The adjustment range

of automatic door closing time is: 0.5s-300s.

After upper and lower limit positions are set and operate normally, the door should be able to close automatically when the set time (state as delivered: 3s) is reached after it is opened to the upper limit position. If you are dissatisfied with the automatic door closing time, please conduct adjustment according to the following steps:

(1) Ensure that the change-over switch of control box face panel is in the "AUTO" state.

(2) Move 2# toggle switch to "Debug", and the green light flickers with the cycle of 3s.

(3) Press "↑" button, and the green light is on; loosen "↑" button, and the green light is off. The delay time increases by 0.5s. It will increase by 0.5s every time the process is repeated.

(4) Press "↓" button, and the green light is on; loosen "↓" button, and the green light is off. The delay time decreases by 0.5s. It will decrease by 0.5s every time the process is repeated.

(5) Move 2# toggle switch to "Normal" after the door closing time is adjusted.

Note: After the automatic door closing time is set, 2# toggle switch must be moved to "Normal" position. Otherwise, the door might be drawn into the door cover.

2. Automatic memory function of limit position

When power failure to the control box or the door is released manually, it has automatic memory function of limit position, and it can automatically recover to upper and lower limit positions after it is powered on.

3. Door closing and opening speed setting:

You may modify the following parameters if you are dissatisfied with the door moving speed:

F716: Low-speed frequency setting

F717: High-speed frequency setting of door opening

F718: High-speed frequency setting of door closing

F769: Advance stop position setting

It has already been set according to the motor parameters of our company at delivery, so generally speaking, adjustment is not needed. Soft start and slow stop frequency should not be too high. Otherwise, the use of reference points might be influenced. If the motor of other companies or door of different specifications is used, some parameters should be properly adjusted.

The modification steps of frequency converter parameters are as follows:

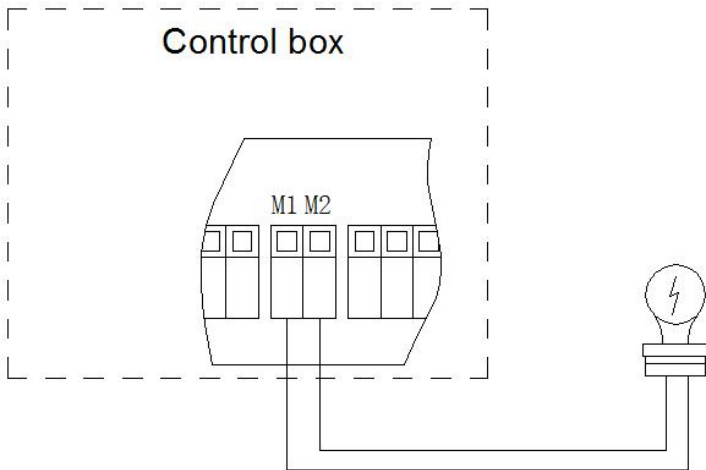
Press MODE → F0 → press ▲ or ▼ to the function code that should be modified → press ENT to enter → press ▲ or ▼ to the reference number that should be modified → press ENT to enter parameter modification → press ▲ or ▼ to modify the values → press ENT to confirm the modification → press ESC → press MODE → press MODE → exit.

Note: Please don't change any parameters in the frequency converter at will. Users need to assume responsibilities for malfunction and losses caused by random adjustment of parameters. If alarm happens to the frequency converter, please find out the reasons before powering on.

7. Connection of other external devices

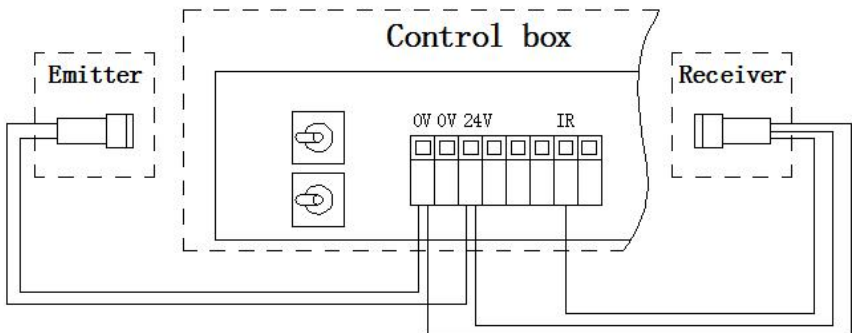
1. Connection of alarm lamps

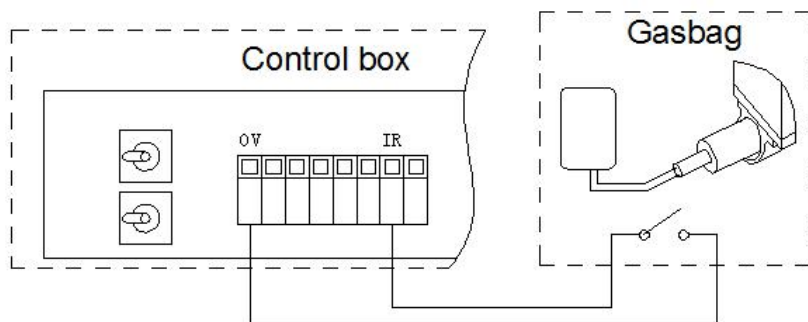
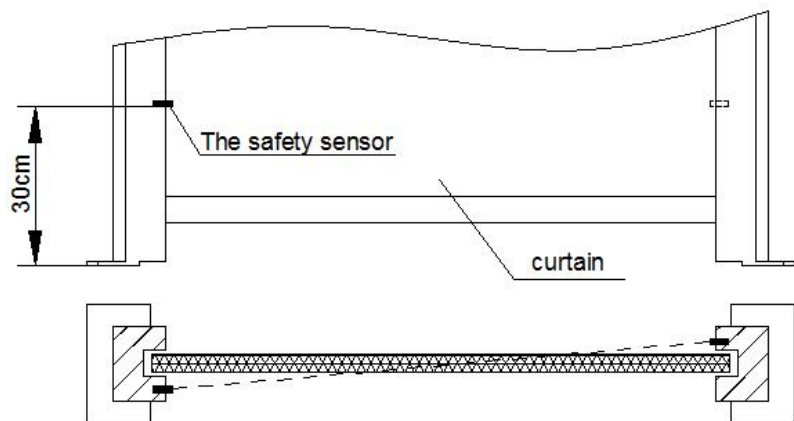
The alarm lamp of 220V should be connected to M1 and M2 ports. When the door moves up and down, the lamp will flicker; when the door stops, the lamp will not flicker.



2. Connection of infrared or gasbag

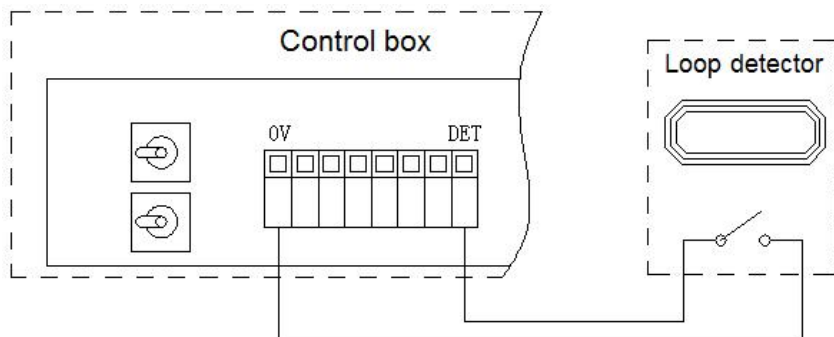
Connect the normally open (N.O.) photo beam (NPN) or gasbag signal wire to 0V、24V and IR ports.





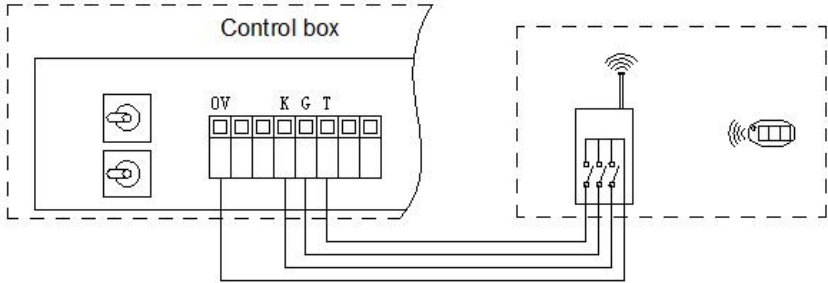
3. Connection of sense coil

Connect the normally open (N.O.) loop detector signal wire to 0V and DET ports.



4. Connection of external remote-control unit

Connect the receiver signal wire of external three-button remote-control unit (N.O.) to 0V, K (on), G (off) and T (stop) ports.



8. Maintenance

It is suggested that professionals should conduct maintenance inspection every six months. All operations should meet safety specifications, and the power supply must be cut off before operation.

Mechanical part:

- Check whether motor installation is firm
- Check whether encoder operation and safety switch are sensitive
- Check whether the brake is effective

Electrical part:

- Check whether the control device in control box operates normally
- Check whether wiring of plug and terminal is firm
- Check the abrasion and insulation situations of electrical components
- Check whether the external devices installed operate normally

Common fault and elimination method

Fault	Possible cause	Elimination methods
Motor does not work	Power failure	Ensure that the power switch is turned on
	Alarm of frequency converter	Check whether the frequency converter display has alarm
	The brake does not work	Check whether the brake works normally
	The emergency button is pressed	Check whether the emergency button is pressed
	Wiring error	Check whether the motor line is wrongly connected or improperly contacted
The green light flickers with the cycle of 6S	The encoder signal is reverse or it is badly contacted; the motor operation direction is wrong	Check whether the encoder is badly contacted, whether the position of 1# toggle switch is consistent with the motor installation direction, and whether the limit position is correctly set. Reset the limit position.
The upper and lower limit positions cannot be set normally	The encoder is not connected	Check whether the crystal plug of encoder is effectively inserted into the interface
	The upper limit position is not set within 10 minutes after the lower limit position is set	Please set the upper limit position within 10 minutes after the lower limit position is set. Otherwise, the limit position should be reset

		The distance is too short	Reset the upper and lower limit positions to guarantee that the distance is greater than 1 meter
		The operation direction of motor is wrong	Check whether the position of 1# toggle switch is consistent with the motor installation direction
The upper and lower limit positions are out of alignment		The encoder is badly contacted or wiring is improper or disturbed	Check the wiring terminal to guarantee that the cable is contacted well. The wire of encoder should be separate from power line and motor line
		The encoder is not reliably fixed	Check whether the encoder and output shaft rotate synchronously and have relative movement. Adjust the fastening connectors
Alarm of frequency converter	E-22	Excessive load	Check the load conditions
	E-21	Setting of acceleration and deceleration time is improper	The acceleration and deceleration time should not be too short
	E-21	The frequency is too high or too low	Check the frequency setting of frequency converter
	E-01	Excess current	Check whether the circuit or load is abnormal
	E-12	The supply voltage is unstable	Check the supply voltage